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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/536,641

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EXAMINER

SHAH, TANMAY K

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/536,641	Applicant(s) D'ALESSANDRO, PIERLUIGI	
	Examiner TANMAY K. SHAH	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-26 and 33-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 and 33-35 is/are allowed.
- 6) ☒ Claim(s) 22-25 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 41-44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in response to the Amendment to Application 10/536,641 filed on 11/8/10.

Response to Arguments

2. Applicant's arguments filed 11/8/10 have been fully considered but they are not persuasive.

3. Applicant argues limitation and amends to include limitation a first circuit coupled to the QPSK modulation circuit and structured to estimate the phase imbalance or gain imbalance of I and Q components of an incoming complex signal prior to the symbol synchronization, the first circuit adapted to generate as an output a ratio between a cross correlation of the I and Q components and a mean value of a square of the I component.

4. Examiner believes amending claim does not still over come the Cited reference Alcock. The amended feature now include the circuit finding the ratio of the cross correlation of I and Q component and mean value of the I component. Still examiner reads this statement broadly as a ratio of Q and I component because mathematically the ratio of cross correlation of I and Q and mean value of I square will be just the ratio of Q to I. Examiner believes it is a just mathematical steps to get to the end result which is just ratio of Q to I.

5. Amended claim 26, now includes all limitations of the base claim and is allowed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 22 – 23 and 25, 36 – 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiss (**US 2002/0097812**) in further view of Alcock (**US 2002/0159539**) in further view of Petre et al. (**US 2003/0095529**).

Regarding claim 22, A receiver for estimation and compensation of phase imbalance or gain imbalance, the receiver comprising:

Wiss teaches a first circuit coupled to the QPSK modulation circuit and structured to estimate the phase imbalance or gain imbalance of I and Q components of an incoming complex signal prior to symbol synchronization (**i.e. as shown in Fig. 5, it receives the modulated input signal and then demodulates it and compensate the I and Q or gain and phase imbalance, it is inherent to one of the ordinary skilled in the art that the synchronization is done after compensation**), and

a second circuit that receives as inputs the uncompensated I and Q components and the output of the first circuit and outputs the compensated I and Q components (**i.e. circuit shown in Fig. 5 receives the first and second uncompensated I and Q components and outputs rebalanced I and Q**). However does not specifically

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disclose a first that the input is a QPSK modulation circuit based on a complex scrambling code and a first circuit adapted to generate as an output a ratio of the product of compensated I and Q components and the square of the compensated I component.

Petre teaches the receiver which receives the QPSK modulated signal with a complex scrambling code (i.e. **QPSK data modulation, real orthogonal Walsh-Hadamard spreading codes of length N=12 along with a random overlay code for scrambling whose period measures, paragraph 229**).

It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to use QPSK modulation provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of modulation and transmission. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Alcock teaches a first circuit adapted to generate as an output a ratio between a cross correlation of the I and Q components and a mean value of a square of the I component (i.e. **examiner interpreted broadly, as a ratio of Q and I, (ratio of product of I and Q and square of I component can be seen as a ratio of Q and I), The amplitude of the signal is given by the magnitude of the vector, and the phase is given by the arc tangent of the ratio of the signals in the Q (real) and I (imaginary) channels, i.e., $\tan^{-1} a/b$, paragraph 10**).

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It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to compensate I and Q imbalance provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of correcting I and Q component. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Regarding claim 23, Wiss and Petre with Alcock teaches the receiver of claim 22,

Wiss further teaches wherein the first circuit structured to receive as inputs the I and Q components of the complex signal after demodulation and compensation (**i.e. as shown in Fig. 5, the rebalanced I and Q is being fed back to the compensation circuit**).

Regarding claim 25, Wiss and Petre with Alcock teaches the receiver of claim 24,

Wiss further teaches synchronizer having inputs coupled to the outputs of the second circuit (**i.e. as described above, the first and second circuit (estimation and compensation) and output is being feedback**), the synchronizer comprising a UMTS synchronizer (**does not specifically disclose it is a WCDMA receiver, but since it receives multi carrier signal it can be implemented in WCDMA (MUTS) receiver**).

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It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to use UMTS synchronizer provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of synchronizing. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Regarding claim 36, the circuit has substantially same limitations as claim 22, thus the same rejection is applicable.

Regarding claim 37, the circuit has substantially same limitations as claim 22, thus the same rejection is applicable.

Regarding claim 38, the circuit has substantially same limitations as claim 23, thus the same rejection is applicable.

Regarding claim 40, the circuit has substantially same limitations as claim 25, thus the same rejection is applicable.

8. Claims 24 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiss (**US 2002/0097812**) in further view of Alcock (**US 2002/0159539**) in further view of Petre et al. (**US 2003/0095529**) in further view of **Richards et al. US (6,289,048)**.

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Regarding claim 24, Wiss and Petre with Alcock teaches the receiver of claim 22,

However does not specifically disclose that the filter is a low-pass filter.

Richards teaches a low pass filter for low pass filtering the signal (**i.e. 118 – 124 of Fig. 3**).

It would have been an obvious matter of design choice to one skilled in the art at the time the invention was made to use low-pass filter as provided by the inventor since applicant has not disclosed that this solves any stated problem or is anything more than hardware choice. A person of ordinary skill in the art would find obvious for the purpose of filtering unwanted noise. In re Dailey and Eilers, 149 USPQ 47 (1966) see MPEP 2144.04.

Regarding claim 39, the circuit has substantially same limitations as claim 24, thus the same rejection is applicable.

Allowable Subject Matter

9. Claims 26, 33 – 35 are allowed.
10. Claims 41 – 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANMAY K. SHAH whose telephone number is (571)270-3624. The examiner can normally be reached on Mon-Thu (7:30 - 5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TANMAY K SHAH/
Examiner, Art Unit 2611

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611